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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/647,475 | 08/26/2003 | Lim Su Lee | 8733.311.10-US | 2307 |
| 30827 | 7590 | 11/29/2005 | EXAMINER | |
| MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006 | | | MARKOFF, ALEXANDER | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1746 | |

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/647,475 | | LEE, LIM SU | |
| | Examiner | | Art Unit | |
| | Alexander Markoff | | 1746 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13, 14, 16, 18, 23-25, 28-30 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13, 14, 16, 18, 23-25, 28-30 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 13, 14, 16, 18, 23-25, 28-30 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Sotozaki et al (US Patent No 6,643,882).

Sotozaki et al teach a method as claimed. See entire document especially Figs. 1(a, b) 3, 4, 8, 9, 11, 13 and the related description. The method comprises cleaning LCD substrates by brushing the upper and lower and side surfaces and cleaning these surfaces with an ultrasonic liquid spray.

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3. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 13, 14, 16, 18, 23-25, 28-30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fishkin et al (US Patent No 6,202,658) in combination with Culkins et al (US Patent No 5,976,267) and Hashimoto et al (US Patent No 6,261,378).

Fishkin et al and Culkins et al both teach cleaning substrates with brushes and sprays. Both documents are concerned about cleaning side surfaces of the substrates during cleaning of the main surfaces. Both documents teach brushing of the main surfaces and spraying the side surfaces. Fishkin et al teach the use of ultrasonic liquid jet to clean the side surfaces. Culkins et al teach the use of brushes and a liquid jet to

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clean the side surfaces. The document does not specify whether or not the liquid jet is energized. Having the combined teachings of the cited documents it would have been obvious to an ordinary artisan at the time the invention was made to use ultrasonic spray in the method of Culkins et al and to use brushing in the method of Fishkin et al to further enhance disclosed cleaning because the documents teach the action of brushes and ultrasonics to solve the same problem. An ordinary artisan would have been reasonably expected that the use of combined action would improve the side cleaning results.

Fishkin et al and Culkins et al do not specifically recite application of their methods to LCD substrates. Both of the documents are mainly directed to cleaning semiconductor wafers. Fishkin et al, however, teach that the method can be applied to glass substrates.

Hashimoto et al teach that the same method of cleaning are conventionally applied to semiconductor wafers and glass substrates, such LCD glass substrates.

Having a combined teachings of Fishkin et al and Culkins et al and Hashimoto et al it would have been obvious to an ordinary artisan at the time the invention was made to apply a modified method of Fishkin et al or Culkins et al to LCD glass substrates with reasonable expectation of success in order to have the substrates cleaned.

Response to Arguments

7. Applicant's arguments filed 9/16/05 have been fully considered but they are not persuasive.

The applicants argue that Sotozaki et al do not teach jetting water with ultrasonic onto a side surface of the substrate.

This is not persuasive. In contrast to the applicant's statement, Sotozaki et al teach that. See et alst Figs. 1(b), 8 and 9 and the related description, especially column 8, line 25 – column 9, line 20. In column 9, lines 6-12 the cited document specifically states that each portion of the wafer is cleaned by both ultrasonic spray and brush.

The applicants argue that Fishkin teaches away from combining brush cleaning and ultrasonic cleaning of the side surfaces. The applicants rely on the teaching of Fishkin regarding the complexity of the scrubbers with side brushes.

This is not persuasive because mere statement that the scrubber with side brushes is more complex does not negate the fact that side brushes and ultrasonic jet were known and conventional used for the same purpose. Fishkin in no way restrict the use of brushes. The fact that Fishkin considers ultrasonic jet be simpler, does not negate the fact that it would have been obvious to an ordinary artisan at the time the invention was made to use ultrasonic spray in the method of Culcins et al and to use brushing in the method of Fishkin et al to further enhance disclosed cleaning because the documents teach the action of brushes and ultrasonics to solve the same problem. An ordinary artisan would have been reasonably expected that the use of combined action would improve the side cleaning results.

The applicants argue that the prior art does not teach brushes extending partially along the side surface of the substrate.

This argument is not persuasive because the brushes disclosed by the prior art extend along the surface they clean.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

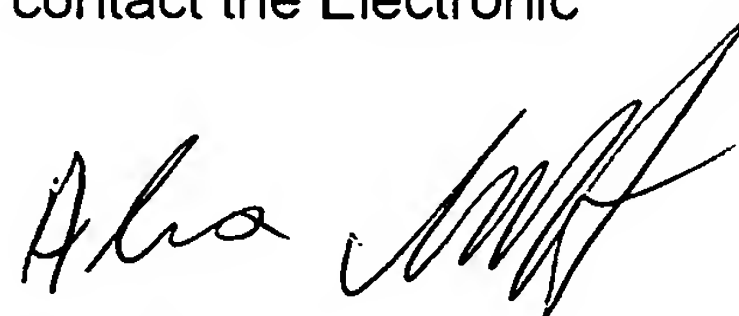
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexander Markoff
Primary Examiner
Art Unit 1746

AM

ALEXANDER MARKOFF
PRIMARY EXAMINER